UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,136	07/11/2003	Roger Lapuh	3239P107	4434

8791   7590   02/05/2008

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER
WONG, XAVIER S

ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
02/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>5th November 2007</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-3,5-19 and 21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-3,5-19 and 21* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

-       Applicant's Amendment filed 5th *November 2007* is acknowledged

-       Claims **1**, **2**, **3**, **5** and **17** have been amended; claims **4** and **20** have been

cancelled

-       Claim **21** has been newly added

-       Claims **1 – 3**, **5 – 19** and **21** are still pending in the present application

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims **1, 2, 3** and **5 – 13** are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Di Benedetto et al (U.S Pat 7,061,858 B1)** in view of **Liu et al (U.S**

Pat 7,197,660 B1).

Consider claim **1**, **Di Benedetto et al** disclose two supervisor (aggregation) cards

interconnected by Port Aggregation (PAgP) protocol (similar to InterSwitch Link) in which

an active supervisor device shares state information with a standby supervisor device

and allow the system to logically operate in a single device as if through an IST link (col.

2 ln. *37-40/43-52*; col. *4* ln. *48-67*); synchronizing forwarding records of local routing

instances for IP networking between the two devices (col. *1* ln. *62-66*; col. *10* ln. *23-25*; col.

15 ln. *38-41*; fig. *2*). **Di Benedetto et al** further disclose the synchronization of MAC

records (e.g. *command message* with address) and exchanging MAC addresses supported

(therefore, obtained) by the first device with a second device (col. *1* ln. *50-55*; col. *19* ln. *39-*

53 & *62-67*; col. *20* ln.*1-3*); and setting routing bit (through bit maps) in each record to

enable local routing instances of the standby (first) device to process the packets [with

said MAC address associated with said MAC records (e.g. *command message*)] (col. *16* ln.

18-34). However, **Di Benedetto et al** may not have explicitly disclosed a Layer 3

protocol within the aggregation devices; a first aggregation device obtaining a second

set of MAC records from a second aggregation device; first aggregation device informs

second aggregation device it is RSMLT enabled. **Liu et al** disclose exchanging of

control messages between a master and backup device to enable the active-active

configuration for both devices (col. 2 ln. 30-48) so data may simultaneously be in master

and backup devices and further the configuration may be used in a router-switch (a

Layer 3 networking protocol device) (col. 1 ln. 17-21; col. 8 ln. 44-58), as *similar* in RSMLT for

layer 2-3 communications (col. 5 ln. 17-25). Both master and backup device have

redundancy tables for storing MAC record sets (col. 4 ln. 21-26; col. 8 ln. 38-43; *command*

messages). It would have been obvious to one of ordinary skill in the art to incorporate

the teachings by **Liu et al** in the system of **Di Benedetto et al**, in order to facilitate layer

2 - layer 3 routing and synchronize data transfer and prevent data loss.

Consider claim **2**, as applied to claim **1**, **Di Benedetto et al** disclose the claimed

invention except prior to synchronizing the forwarding records, exchanging messages

between the two aggregate devices to ensure that RSMLT is enabled on both devices.

Yet, may not have *explicitly* taught sub-second failover or aggregation devices operating

as layer 3 devices. **Liu et al** disclose exchanging of control messages between a

master and backup device to enable the active-active configuration for both devices (col.

2 ln. 30-48) so data may simultaneously be in master and backup devices and further the

configuration may be used in a router-switch (a Layer 3 device), as *similar to RSMLT*,

(col. 1 ln. 17-21; col. 8 ln. 44-58) so that the supervisor cards may act as layer 3 devices

(col. 5 ln. 17-25) as well. It would have been obvious to one of ordinary skill in the art to

incorporate the teachings by **Liu et al** in the method of **Di Benedetto et al**, in order to synchronize data transfer and prevent data loss and achieve faster layer 3 recovery. Though **Di Benedetto** et al and **Liu** et al may not have *explicitly* mentioned *sub-second* failover, the concept of sub-second failover is well-known in the art for quick recovery.

Consider claim **3**, as applied to claim **1**, **Di Benedetto et al**, as modified by **Liu et al**, mention forwarding MAC records (col. *1* ln. *58-59*; col. *18* ln. *1-4*; *command message*). Though **Di Benedetto et al**, as modified by **Liu et al**, may not have *explicitly* mentioned routing the records over *different* ports than the ports which the records are forwarded between the devices; however, referring to figure *2*, **Di Benedetto et al** show multiple ports (P*0*, P*1*, bus link between UDLINK *0* & *1*, etc.) may be obvious to use for exchanging messages through different ports. **Liu** et al also show in figures *4b*, *7* and *8*, etc. that multiple paths/ports may be used for exchanging messages. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow forwarding records from one port and routing records from another different port in order to facilitate routing according to destination. About the indication, it is well-known in the art that, for example, MAC address contains source address (routed in from one port) and to be forwarded to the destination address (forwarded to another different port) (col. *1* ln. *51-59*). The indication may be *broadly interpreted* as the MAC source port and destination port addresses.

Consider claims **5**, **6** and **21**, as applied to claims **3**, **5** and **10**, **Di Benedetto et al**, as modified by **Liu et al**, disclose synchronization of MAC records and exchanging MAC addresses supported by the first device with a second device for processing (col. *1*

ln. *50-55*; col. *19* ln. *39-53* & *62-67*; col. *20* ln.*1-3*); and setting routing bit (through bit maps)

in each record to enable local routing instances of the standby (first) device to process

the packets [with said MAC address associated with said MAC records] (col. *16* ln. *18-34*).

Consider claim **7**, as applied to claim **2**, **Di Benedetto et al** further disclose when

a failure of link interconnection occurs in the active (second) device, the (first) standby

device will take over (therefore, handling all packets from the first device) the standby device

(col. *2* ln. *49-50*; col. *3* ln. *61-65*; col. *11* ln. *60-63*).

Consider claim **8**, as applied to claim **2**, **Liu et al** further disclose when a loss of

link occurs at a switch, the other switch handles all information from the link-down

switch (col. *7* ln. *20-29*; clm. *1*).

Consider claims **9**, **10**, **11**, **13** and **19**, **Di Benedetto et al** disclose two supervisor

(aggregation) cards interconnected by Port Aggregation (PAgP) (similar to InterSwitch Link)

protocol in which an active supervisor device shares state information with a standby

supervisor device and allow the system to logically operate in a single device *as if*

through an IST link (col. *2* ln. *37-40* & *43-52*; col. *4* ln. *48-67*); both first and second device

comprise ports *203*, processing logic EARL *214* and memory with routing/forwarding

table *218* capable for storing the corresponding MAC record sets used by one or more

local routing instances (col. *1* ln. *50-59*; col. *6* ln. *4-16*; col. *9* ln. *1-14*; col. *15* ln. *62-67*; col. *16*

ln. *18-34*; fig. *2*). **Di Benedetto et al** further disclose the synchronization of MAC records

(e.g. *command message* with address) and exchanging MAC addresses supported

(therefore, obtained) by the first device with a second device for processing (col. *1* ln. *50-*

55; col. *19* ln. *39-53* & *62-67*; col. *20* ln.*1-3*); and setting routing bit (through bit maps) in each

record to enable local routing instances of the standby (first) device to process the packets [with said MAC address associated with said MAC records (e.g. *command message*)] (col. *16* ln. *18-34*). However, **Di Benedetto et al** may not have explicitly disclosed a Layer 3 networking protocol within the aggregation devices; a first aggregation device obtaining a second set of MAC records from a second aggregation device; first aggregation device informs second aggregation device it is RSMLT enabled. **Liu et al** disclose exchanging of control messages between a master and backup device to enable the active-active configuration for both devices (col. *2* ln. *30-48*) so data may simultaneously be in master and backup devices and further the configuration may be used in a router-switch (a Layer 3 networking protocol device), as in RSMLT (col. *1* ln. *17-21*; col. *8* ln. *44-58*). Both master and backup device have redundancy tables for storing MAC record sets (col. *4* ln. *21-26*; col. *8* ln. *38-43*). It would have been obvious to one of ordinary skill in the art to incorporate the teachings by **Liu et al** in the system of **Di Benedetto et al**, in order to facilitate layer 2 / layer 3 routing and synchronize data transfer and prevent data loss.

Consider claim **12**, as applied to claim **9**, **Liu et al** further disclose two redundant (aggregation) switches *301* and *302* (col. *7* ln. *19-29*; fig. *3*).

Consider claim **19**, **Di Benedetto et al** disclose an supervisor aggregation device interconnected to another peer by InterSwitch Link / Port Aggregation (PAgP) protocol in which an active supervisor device shares state information with a standby supervisor device and allow the system to logically operate in a single device as if through an IST link (col. *2* ln. *37-40* & *43-52*; col. *4* ln. *48-67*), wherein a control plane is in communication

with a data plane (fig. *2* item *202* & *204* embodiments) and synchronization of MAC

records and exchanging MAC addresses supported by the first device with a second

device (col. *1* ln. *50-55*; col. *19* ln. *39-53/62-67*; col. *20* ln.*1-3*) and local routing instances for

IP networking (col. *1* ln. *63-65*; col. *16* ln. *18-34*). However, **Di Benedetto et al** may not

have *explicitly* mentioned providing *enough time to converge* without adversely affecting

data forwarding operations through synchronization process or providing sub-second

failover recovery. **Liu et al** disclose time required for recovery (convergence) is only

slightly longer [enough time] than time required detecting a master device failure and

does not affect network performance [on-going connections] (col. *5* ln. *53-62*; col. *8* ln. *15-*

19; clm. *1*). It would have been obvious to one of ordinary skill in the art to incorporate

the teachings by **Liu et al** in the device of **Di Benedetto et al**, in order to avoid data

loss. Though **Di Benedetto** et al and **Liu** et al may not have *explicitly* mentioned sub-

second failover, the concept of sub-second failover is well-known in the art for quick

recovery.

Claims **14 – 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Di Benedetto et al (U.S Pat 7,061,858 B1) in view of **Liu et al (U.S Pat 7,197,660 B1)**

and in further view of **Goodwin (U.S Pub 2002/0124107 A1)**.

Consider claims **14** and **15**, as applied to claims **13** and **14**, **Di Benedetto et al**,

as modified by **Liu et al**, disclose an EVENT_BEGIN message and then a SYNC_

RECORD_ MESSAGE with routing instances for a supervisor device to begin

synchronization of MAC records (col. *14* ln. *31-44/60-63*; col. *15* ln. *33-53*). However, **Di**

Benedetto et al may not have explicitly mentioned the message comprises of IP/IPX network address and MAC addresses of routing instances, VLAN identifiers of a VLAN on which the IP/IPX routing instances participate. **Goodwin** discloses a *VLAN Advertisement Protocol*, deploys a technique called *Group Mobility* that recognizes both IP and IPX frames (paragraph *0024*). Therefore, the invention is able to extract data received from hello messages that are used to build routing tables, which contain IPX addresses; and VLAN membership (identification) tables, which contain MAC address information (paragraphs *0041-43, 0053-59*; table *3*). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teachings of a system that sends second messages that comprises IP/IPX address and MAC address of IP/IPX routing instances of the first aggregation switch and VLAN identifiers of a VLAN of IP/IPX routing instances participate as taught by **Goodwin**, in the system of **Di Benedetto et al** as modified by **Liu et al**, in order to automatically identify network nodes.

Consider claim **16**, **Di Benedetto al** disclose after the second SYNC_RECORD_ MESSAGE, an event manager causes routing instances to wait [hold-down time] before instances are routed to the new supervisor which [programs] determines which records are valid (col. *4* ln. *53-67*; col. *7* ln. *41-59*; fig. *3* items *204* & *328*; col. *16* ln. *34-38*).

Consider claim **17**, as applied to claim **16**, **Di Benedetto et al** disclose after the wait [hold-down time expiration], the active supervisor supports process the records / instances to be routed to the standby supervisor (col. *16* ln. *54-66*).

Consider claim **18**, as applied to claim **17**, **Di Benedetto et al** disclose a newly

active (former standby) supervisor completes a consistency check [hold-up time] and

resume forwarding messages previously disrupted from the failure of the active device

(col. *21* ln. *14-28*).

Response to Arguments

Applicant's arguments filed on *5th November 2007* with respect to claims **1 – 3**

have been considered but are not persuasive. Please refer to *revised* claims **1 – 3**

rejection above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

- **Balachandran** et al **(U.S Pub 2003/0185181 A1)** teach an incremental
  redundancy transmission communication system where <u>layer 3 frames are
  provided to the layer 2</u>, MAC layer, at a transmitter and are translated into a
  byte stream using flags for demarcation. This permits the MAC layer to
  provide <u>a unified transport mechanism for different layer 3 protocols</u>. This
  byte stream is segmented into RLP frames and assigned a frame sequence
  number (FSN). The FSN is not explicitly transmitted as part of the RLP frame.

- **Andreev** et al **(U.S Pub 2007/0198670 A1)** mention Lidcam Technology of
  Melbourne Australia describes in a 2001 document titled "ServerIron Internet
  Web Switches," detection and <u>sub-second fail-over</u> to the next server in a
  group that provides like service. Their ServerIron switch detects application
  error conditions such as the hypertext transfer protocol (HTTP) "404 Object
  not found" before the client sees the message and transparently redirects the
  request to another server without any manual intervention. To provide very
  high availability, the ServerIron switch includes redundancy capability that
  protects against session loss.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, this action is made final. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Szewai Wong whose telephone number is 571-270-1780. The examiner can normally be reached on Monday through Friday 8 am - 5 pm (EST).
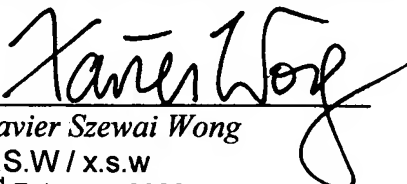
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
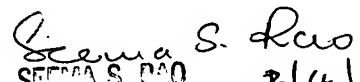
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Xavier Szewai Wong
X.S.W / x.s.w
3rd February 2008

SEEMA S. RAO 2/4/08
SUPERVISOR
TECHNOLOGY CENTER 2600